

REMARKS

Entry of this amendment is respectfully requested.

Claims 26-27, 29-30, 39, 41-42 and 54-55 were rejected under 35 U.S.C. §103(a) for allegedly being obvious over Ichiki in view of Adler. Claims 33-35 were rejected under 35 U.S.C. §103(a) over Ichiki, Adler and Oeschner. Claims 28, 37-38 and 43 were rejected under 35 U.S.C. §103(a) for allegedly being obvious over Ichiki, Adler and Betz. Claims 31-32 and 36 were rejected under 35 U.S.C. §103(a) over Ichiki, Adler and Kumagai. Applicants respectfully traverse each of these rejections.

Ichiki discloses a beam generating chamber for an inductively coupled plasma (ICP) with a DC powersupply to excelerate electrons toward orifice electrode; see [0031], [0041]. Therefore, the grid in the teaching of Ichiki is subject to an DC voltage which is applied by the DC powersupply . In contrast, the current invention is directed to a high frequency plasma beam source, wherein the plasma beam generation is produced through a different type of mechanism without any DC powersupply.

More specifically, the plasma beam is extracted from a low-pressure plasma which is produced by means of electrical and magnetic fields in that high frequency voltage is applied between the extraction electrode, which is a fine grid and another electrode. The plasma is maintained between the electrodes and plasma ions are accelerated towards the extraction electrode in contact with the plasma since the plasma is self-biasing against the plasma to a higher potential.

The magnitude of the self-establishing ion-accelerating voltage between the plasma and the extraction electrode is determined by the amplitude of the radio frequency voltage dropping between the plasma and the extraction electrode. The extracted ion current is superimposed with an electron current of like magnitude flowing synchronously with the high frequency to compensate for the ion current. The low-pressure plasma and the extracted plasma beam are shaped by steady magnetic fields of suitable magnitude and configuration.

Adler discloses a ion implantation device based on pulse power technology. In contrast to the presently claimed invention, a cloud of ions is ejected of the target by pulsing a high positive voltage. In this case, the grid will establish an electrostatic gradient across which ions will eject; col.5, line 22 – 32. For a person of skill in the art, it is respectfully submitted that it would not be obvious that, as in the case of the presently claimed invention, a non- planar grid without an electrostatic gradient will produce a divergent beam similar to the teaching of Adler.

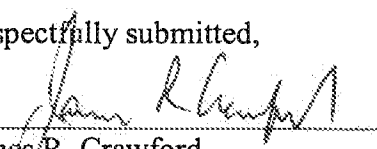
Therefore neither claim 26, nor any of its dependent claims, are obvious in view of Ichiki and Adler.

In view of the foregoing, all rejections should be withdrawn. Allowance is respectfully requested.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50-0624, under Order No. NY-RPP-202-US.

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Respectfully submitted,

By 
James R. Crawford
Registration No.: 39,155
FULBRIGHT & JAWORSKI L.L.P.
666 Fifth Avenue
New York, New York 10103
(212) 318-3000
(212) 318-3400 (Fax)
Attorney for Applicant